



4453us.ST25.txt
SEQUENCE LISTING

<110> Ankenbauer, Waltraud
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Elizaveta, Bonch-Osmolovskaya
Svetlichny, Vitaly
Ebenbichler, Christine
Angerer, Bernhard
Laue, Frank

<120> Thermostable Nucleic Acid Polymerase From Thermococcus gorgonarius

<130> 4453

<140> US 09/269,860

<141> 1999-04-01

<150> PCT/EP97/05393

<151> 1997-10-01

<150> EP/97100584.8

<151> 1997-01-16

<150> EP/96115874.8

<151> 1996-10-03

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<170> PatentIn version 3.0

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1				5					10					15		

agg	atc	ttc	aag	aag	gag	aac	ggc	gag	ttc	acc	ata	gac	tac	gac	aga	96
Arg	Ile	Phe	Lys	Lys	Glu	Asn	Gly	Glu	Phe	Thr	Ile	Asp	Tyr	Asp	Arg	
			20					25					30			

aac	ttt	gag	cca	tac	atc	tac	gcg	ctc	ttg	aag	gac	gac	tct	ccg	att	144
Asn	Phe	Glu	Pro	Tyr	Ile	Tyr	Ala	Leu	Leu	Lys	Asp	Asp	Ser	Pro	Ile	
		35					40					45				

gag	gac	gtc	aag	aag	ata	act	gcc	gag	agg	cac	ggc	act	acc	gtt	agg	192
Glu	Asp	Val	Lys	Lys	Ile	Thr	Ala	Glu	Arg	His	Gly	Thr	Thr	Val	Arg	
	50					55					60					

gtt	gtc	agg	gcc	gag	aaa	gtg	aag	aag	aag	ttc	cta	ggc	agg	ccg	ata	240
Val	Val	Arg	Ala	Glu	Lys	Val	Lys	Lys	Lys	Phe	Leu	Gly	Arg	Pro	Ile	
65					70					75					80	

gag	gtc	tgg	aag	ctc	tac	ttc	act	cac	ccc	cag	gac	gtt	ccc	gca	atc	288
Glu	Val	Trp	Lys	Leu	Tyr	Phe	Thr	His	Pro	Gln	Asp	Val	Pro	Ala	Ile	
			85						90					95		

agg	gac	aag	ata	aag	gag	cat	cct	gcc	gtt	gtg	gac	atc	tac	gag	tac	336
Arg	Asp	Lys	Ile	Lys	Glu	His	Pro	Ala	Val	Val	Asp	Ile	Tyr	Glu	Tyr	
			100					105					110			

gac	atc	ccc	ttc	gcg	aag	cgc	tac	ctc	ata	gac	aaa	ggc	tta	atc	ccg	384
Asp	Ile	Pro	Phe	Ala	Lys	Arg	Tyr	Leu	Ile	Asp	Lys	Gly	Leu	Ile	Pro	
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atg	gag	ggc	gac	gag	gaa	ctt	aag	atg	ctc	gcc	ttc	gac	atc	gag	acg	432
Met	Glu	Gly	Asp	Glu	Glu	Leu	Lys	Met	Leu	Ala	Phe	Asp	Ile	Glu	Thr	
	130					135					140					
ctc	tat	cac	gag	ggc	gag	gag	ttc	gcc	gaa	ggg	cct	atc	ctg	atg	ata	480
Leu	Tyr	His	Glu	Gly	Glu	Glu	Phe	Ala	Glu	Gly	Pro	Ile	Leu	Met	Ile	
145					150					155					160	
agc	tac	gcc	gac	gag	gaa	ggg	gcg	cgc	gtt	att	acc	tgg	aag	aat	atc	528
Ser	Tyr	Ala	Asp	Glu	Glu	Gly	Ala	Arg	Val	Ile	Thr	Trp	Lys	Asn	Ile	
				165					170					175		
gac	ctt	ccc	tat	gtc	gac	gtc	gtt	tcc	acc	gag	aag	gag	atg	ata	aag	576
Asp	Leu	Pro	Tyr	Val	Asp	Val	Val	Ser	Thr	Glu	Lys	Glu	Met	Ile	Lys	
			180					185					190			
cgc	ttc	ctc	aag	gtc	gtc	aag	gaa	aag	gat	ccc	gac	gtc	ctc	ata	atc	624
Arg	Phe	Leu	Lys	Val	Val	Lys	Glu	Lys	Asp	Pro	Asp	Val	Leu	Ile	Ile	
		195					200					205				
tac	aac	ggc	gac	aac	ttc	gac	ttc	gcc	tac	ctc	aag	aag	cgc	tcc	gag	672
Tyr	Asn	Gly	Asp	Asn	Phe	Asp	Phe	Ala	Tyr	Leu	Lys	Lys	Arg	Ser	Glu	
	210					215					220					
aag	ctc	gga	gtc	aag	ttc	atc	ctc	gga	agg	gaa	ggg	agc	gaa	ccg	aaa	720
Lys	Leu	Gly	Val	Lys	Phe	Ile	Leu	Gly	Arg	Glu	Gly	Ser	Glu	Pro	Lys	
225					230					235					240	
atc	cag	cgc	atg	ggc	gat	cgc	ttt	gcg	gtg	gag	gtc	aag	gga	agg	att	768
Ile	Gln	Arg	Met	Gly	Asp	Arg	Phe	Ala	Val	Glu	Val	Lys	Gly	Arg	Ile	
				245					250					255		
cac	ttc	gac	ctc	tac	ccc	gtc	att	agg	aga	acg	att	aac	ctc	ccc	act	816
His	Phe	Asp	Leu	Tyr	Pro	Val	Ile	Arg	Arg	Thr	Ile	Asn	Leu	Pro	Thr	
			260					265					270			
tac	acc	ctt	gag	gca	gta	tat	gaa	gcc	atc	ttt	gga	cag	ccg	aag	gag	864
Tyr	Thr	Leu	Glu	Ala	Val	Tyr	Glu	Ala	Ile	Phe	Gly	Gln	Pro	Lys	Glu	
		275					280					285				
aag	gtc	tac	gct	gag	gag	ata	gcg	cag	gcc	tgg	gaa	acg	ggc	gag	gga	912
Lys	Val	Tyr	Ala	Glu	Glu	Ile	Ala	Gln	Ala	Trp	Glu	Thr	Gly	Glu	Gly	
	290					295					300					
tta	gaa	agg	gtg	gcc	cgc	tac	tcg	atg	gag	gac	gcg	aag	gta	acc	tat	960
Leu	Glu	Arg	Val	Ala	Arg	Tyr	Ser	Met	Glu	Asp	Ala	Lys	Val	Thr	Tyr	
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gaa ctc gga aaa gag ttc ttc cct atg gaa gcc cag ctc tcg cgc ctc	1008
Glu Leu Gly Lys Glu Phe Phe Pro Met Glu Ala Gln Leu Ser Arg Leu	
325 330 335	
gta ggc cag agc ctc tgg gat gta tct cgc tcg agt acc gga aac ctc	1056
Val Gly Gln Ser Leu Trp Asp Val Ser Arg Ser Ser Thr Gly Asn Leu	
340 345 350	
gtc gag tgg ttt ttg ctg agg aag gcc tac gag agg aat gaa ctt gca	1104
Val Glu Trp Phe Leu Leu Arg Lys Ala Tyr Glu Arg Asn Glu Leu Ala	
355 360 365	
cca aac aag ccg gac gag agg gag ctg gca aga aga agg gag agc tac	1152
Pro Asn Lys Pro Asp Glu Arg Glu Leu Ala Arg Arg Arg Glu Ser Tyr	
370 375 380	
gcg ggt gga tac gtc aag gag ccc gaa agg gga ctg tgg gag aac atc	1200
Ala Gly Gly Tyr Val Lys Glu Pro Glu Arg Gly Leu Trp Glu Asn Ile	
385 390 395 400	
gtg tat ctg gac ttc cgc tcc ctg tat cct tcg ata ata atc acc cat	1248
Val Tyr Leu Asp Phe Arg Ser Leu Tyr Pro Ser Ile Ile Ile Thr His	
405 410 415	
aac gtc tcc cct gat aca ctc aac agg gag ggt tgt gag gag tac gac	1296
Asn Val Ser Pro Asp Thr Leu Asn Arg Glu Gly Cys Glu Glu Tyr Asp	
420 425 430	
gtg gct cct cag gta ggc cat aag ttc tgc aag gac ttc ccc ggc ttc	1344
Val Ala Pro Gln Val Gly His Lys Phe Cys Lys Asp Phe Pro Gly Phe	
435 440 445	
atc cca agc ctc ctc gga gac ctc ttg gag gag aga cag aag gta aag	1392
Ile Pro Ser Leu Leu Gly Asp Leu Leu Glu Glu Arg Gln Lys Val Lys	
450 455 460	
aag aag atg aag gcc act ata gac cca atc gag aag aaa ctc ctc gat	1440
Lys Lys Met Lys Ala Thr Ile Asp Pro Ile Glu Lys Lys Leu Leu Asp	
465 470 475 480	
tac agg caa cga gca atc aaa atc ctt gct aat agc ttc tac ggt tac	1488
Tyr Arg Gln Arg Ala Ile Lys Ile Leu Ala Asn Ser Phe Tyr Gly Tyr	
485 490 495	
tac ggc tat aca aag gcc cgc tgg tac tac aag gag tgc gcc gag agc	1536
Tyr Gly Tyr Thr Lys Ala Arg Trp Tyr Tyr Lys Glu Cys Ala Glu Ser	
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gtt acc ggt tgg ggc agg gag tac atc gag acc acg ata agg gaa ata	1584
Val Thr Gly Trp Gly Arg Glu Tyr Ile Glu Thr Thr Ile Arg Glu Ile	
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gag gag aaa ttt ggc ttt aaa gtc ctc tac gcg gac aca gat gga ttt	1632
Glu Glu Lys Phe Gly Phe Lys Val Leu Tyr Ala Asp Thr Asp Gly Phe	
530 535 540	
ttc gca aca ata cct gga gcg gac gcc gaa acc gtc aaa aag aag gca	1680
Phe Ala Thr Ile Pro Gly Ala Asp Ala Glu Thr Val Lys Lys Lys Ala	
545 550 555 560	
aag gag ttc ctg gac tac atc aac gcc aaa ctg ccc ggc ctg ctc gaa	1728
Lys Glu Phe Leu Asp Tyr Ile Asn Ala Lys Leu Pro Gly Leu Leu Glu	
565 570 575	
ctc gaa tac gag ggc ttc tac aag cgc ggc ttc ttc gtg acg aag aag	1776
Leu Glu Tyr Glu Gly Phe Tyr Lys Arg Gly Phe Phe Val Thr Lys Lys	
580 585 590	
aag tac gcg gtt ata gac gag gag gac aag ata acg acg cgc ggg ctt	1824
Lys Tyr Ala Val Ile Asp Glu Glu Asp Lys Ile Thr Thr Arg Gly Leu	
595 600 605	
gaa ata gtt agg cgt gac tgg agc gag ata gcg aag gag acg cag gcg	1872
Glu Ile Val Arg Arg Asp Trp Ser Glu Ile Ala Lys Glu Thr Gln Ala	
610 615 620	
agg gtt ctt gag gcg ata cta aag cac ggt gac gtt gaa gaa gcg gta	1920
Arg Val Leu Glu Ala Ile Leu Lys His Gly Asp Val Glu Glu Ala Val	
625 630 635 640	
agg att gtc aaa gag gtt acg gag aag ctg agc aag tac gag gtt cca	1968
Arg Ile Val Lys Glu Val Thr Glu Lys Leu Ser Lys Tyr Glu Val Pro	
645 650 655	
ccg gag aag ctg gtc atc tac gag cag ata acc cgc gac ctg aag gac	2016
Pro Glu Lys Leu Val Ile Tyr Glu Gln Ile Thr Arg Asp Leu Lys Asp	
660 665 670	
tac aag gcc acc ggg ccg cat gtg gct gtt gca aaa cgc ctc gcc gca	2064
Tyr Lys Ala Thr Gly Pro His Val Ala Val Ala Lys Arg Leu Ala Ala	
675 680 685	
agg ggg ata aaa atc cgg ccc gga acg gtc ata agc tac atc gtg ctc	2112
Arg Gly Ile Lys Ile Arg Pro Gly Thr Val Ile Ser Tyr Ile Val Leu	
690 695 700	

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aaa ggc tcg gga agg att ggg gac agg gct ata ccc ttt gac gaa ttt 2160
 Lys Gly Ser Gly Arg Ile Gly Asp Arg Ala Ile Pro Phe Asp Glu Phe
 705 710 715 720

gac ccg gca aag cac aag tac gat gca gaa tac tac atc gag aac cag 2208
 Asp Pro Ala Lys His Lys Tyr Asp Ala Glu Tyr Tyr Ile Glu Asn Gln
 725 730 735

gtt ctt cca gct gtg gag agg att ctg agg gcc ttt ggt tac cgt aaa 2256
 Val Leu Pro Ala Val Glu Arg Ile Leu Arg Ala Phe Gly Tyr Arg Lys
 740 745 750

gaa gat tta agg tat cag aaa acg cgg cag gtt ggc ttg ggg gcg tgg 2304
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cta aaa cct aag aca tga 2322
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 35 40 45

Glu Asp Val Lys Lys Ile Thr Ala Glu Arg His Gly Thr Thr Val Arg
 50 55 60

Val Val Arg Ala Glu Lys Val Lys Lys Lys Phe Leu Gly Arg Pro Ile
 65 70 75 80

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Glu Val Trp Lys Leu Tyr Phe Thr His Pro Gln Asp Val Pro Ala Ile
 85 90 95

Arg Asp Lys Ile Lys Glu His Pro Ala Val Val Asp Ile Tyr Glu Tyr
 100 105 110

Asp Ile Pro Phe Ala Lys Arg Tyr Leu Ile Asp Lys Gly Leu Ile Pro
 115 120 125

Met Glu Gly Asp Glu Glu Leu Lys Met Leu Ala Phe Asp Ile Glu Thr
 130 135 140

Leu Tyr His Glu Gly Glu Glu Phe Ala Glu Gly Pro Ile Leu Met Ile
 145 150 155 160

Ser Tyr Ala Asp Glu Glu Gly Ala Arg Val Ile Thr Trp Lys Asn Ile
 165 170 175

Asp Leu Pro Tyr Val Asp Val Val Ser Thr Glu Lys Glu Met Ile Lys
 180 185 190

Arg Phe Leu Lys Val Val Lys Glu Lys Asp Pro Asp Val Leu Ile Ile
 195 200 205

Tyr Asn Gly Asp Asn Phe Asp Phe Ala Tyr Leu Lys Lys Arg Ser Glu
 210 215 220

Lys Leu Gly Val Lys Phe Ile Leu Gly Arg Glu Gly Ser Glu Pro Lys
 225 230 235 240

Ile Gln Arg Met Gly Asp Arg Phe Ala Val Glu Val Lys Gly Arg Ile
 245 250 255

His Phe Asp Leu Tyr Pro Val Ile Arg Arg Thr Ile Asn Leu Pro Thr
 260 265 270

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Tyr Thr Leu Glu Ala Val Tyr Glu Ala Ile Phe Gly Gln Pro Lys Glu
 275 280 285

Lys Val Tyr Ala Glu Glu Ile Ala Gln Ala Trp Glu Thr Gly Glu Gly
 290 295 300

Leu Glu Arg Val Ala Arg Tyr Ser Met Glu Asp Ala Lys Val Thr Tyr
 305 310 315 320

Glu Leu Gly Lys Glu Phe Phe Pro Met Glu Ala Gln Leu Ser Arg Leu
 325 330 335

Val Gly Gln Ser Leu Trp Asp Val Ser Arg Ser Ser Thr Gly Asn Leu
 340 345 350

Val Glu Trp Phe Leu Leu Arg Lys Ala Tyr Glu Arg Asn Glu Leu Ala
 355 360 365

Pro Asn Lys Pro Asp Glu Arg Glu Leu Ala Arg Arg Arg Glu Ser Tyr
 370 375 380

Ala Gly Gly Tyr Val Lys Glu Pro Glu Arg Gly Leu Trp Glu Asn Ile
 385 390 395 400

Val Tyr Leu Asp Phe Arg Ser Leu Tyr Pro Ser Ile Ile Ile Thr His
 405 410 415

Asn Val Ser Pro Asp Thr Leu Asn Arg Glu Gly Cys Glu Glu Tyr Asp
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Val Ala Pro Gln Val Gly His Lys Phe Cys Lys Asp Phe Pro Gly Phe
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Lys Lys Met Lys Ala Thr Ile Asp Pro Ile Glu Lys Lys Leu Leu Asp
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Val Thr Gly Trp Gly Arg Glu Tyr Ile Glu Thr Thr Ile Arg Glu Ile
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Glu Glu Lys Phe Gly Phe Lys Val Leu Tyr Ala Asp Thr Asp Gly Phe
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Phe Ala Thr Ile Pro Gly Ala Asp Ala Glu Thr Val Lys Lys Lys Ala
 545 550 555 560

Lys Glu Phe Leu Asp Tyr Ile Asn Ala Lys Leu Pro Gly Leu Leu Glu
 565 570 575

Leu Glu Tyr Glu Gly Phe Tyr Lys Arg Gly Phe Phe Val Thr Lys Lys
 580 585 590

Lys Tyr Ala Val Ile Asp Glu Glu Asp Lys Ile Thr Thr Arg Gly Leu
 595 600 605

Glu Ile Val Arg Arg Asp Trp Ser Glu Ile Ala Lys Glu Thr Gln Ala
 610 615 620

Arg Val Leu Glu Ala Ile Leu Lys His Gly Asp Val Glu Glu Ala Val
 625 630 635 640

Arg Ile Val Lys Glu Val Thr Glu Lys Leu Ser Lys Tyr Glu Val Pro
 645 650 655

37

B

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Pro Glu Lys Leu Val Ile Tyr Glu Gln Ile Thr Arg Asp Leu Lys Asp
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Tyr Lys Ala Thr Gly Pro His Val Ala Val Ala Lys Arg Leu Ala Ala
675 680 685

Arg Gly Ile Lys Ile Arg Pro Gly Thr Val Ile Ser Tyr Ile Val Leu
690 695 700

Lys Gly Ser Gly Arg Ile Gly Asp Arg Ala Ile Pro Phe Asp Glu Phe
705 710 715 720

Asp Pro Ala Lys His Lys Tyr Asp Ala Glu Tyr Tyr Ile Glu Asn Gln
725 730 735

Val Leu Pro Ala Val Glu Arg Ile Leu Arg Ala Phe Gly Tyr Arg Lys
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Glu Asp Leu Arg Tyr Gln Lys Thr Arg Gln Val Gly Leu Gly Ala Trp
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Leu Lys Pro Lys Thr
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